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Two Cases of *Erysipelothrix monocytogenes* Infection in Cattle

BY

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SUMMARY.—(1) Two cases of Erysipelothrix monocytogenes *infection in adult cattle are described. Diagnosis was confirmed on bacteriological and pathological examinations.*

(2) A brief review of the position with regard to E. monocytogenes *infection in America and Britain is made.*

(3) The differential diagnosis and significance of such cases is described.

ERYSIPELOTHRIX monocytogenes has been recognised as a cause of disease in several species of animals, notably sheep, cattle and pigs in various countries. The condition has been reported only twice before in cattle in Britain (Harbour, 1941; Wynn Jones, 1954). The present report deals with a further 2 cases diagnosed in Scotland.

Case I

A three-year-old Jersey cow which had been purchased 7 months previously from Aberdeenshire and had calved in August 1956.

History

This animal, together with a number of others, had been affected with keratitis in the late summer of 1956. At the beginning of January, 1957, 2 calves and one cow had died suddenly, but no details were available. On the afternoon of January 28th, 1957, the animal in question was noticed to yield very little milk and to have poor appetite. Next morning she was salivating excessively, eating very slowly and dropping food from her mouth. While standing in the stall, the right fore leg was held off the floor for long periods.

Clinical examination January 29th, 1957

The cow was visited in the morning and was found to be standing, tied by a chain, in the stall. Her head was held downwards and to the left. She appeared to be maintaining her balance by hanging on the chain. When freed from the stall, she stumbled to the wall and could then walk reasonably well in a forward direction, but only if leaning against the wall with her left side. On being taken outside she circled constantly to the left and could only be forced to turn to the right by pushing her head round manually. The flexed right fore leg showed no visible lesion.

Excessive salivation was present but no lesions could be found in the mouth. A sodden bolus of hay had lain unmasticated in the mouth for 2 hours. The ears appeared normal and there was no blindness. Faeces were normal. The pulse rate was 70 per minute and respiration was tachypnoeic with some coughing. There was a pharyngeal rattle apparently produced by excessive amounts of unswallowed saliva. A tentative diagnosis of encephalitis possibly due to *Listeria monocytogenes* was made.

On January 30th, 1957, the condition of the cow had deteriorated, and it was unable to rise. The animal was admitted to the University Veterinary Hospital and a routine examination was carried out.

The bodily condition was poor. The fore legs were maintained in extension and the head and neck were kept strongly flexed to the left. Manual straightening of the neck caused excitement, struggling and attempts to return the head to the flexed position. The cow lay constantly on its right side and resisted attempts to change this position. Both eyes showed corneal cicatrices and slight

nystagmus was present. The animal was not blind. The nose was dry. It was impossible to force open the mouth more than one inch. There were no ruminal movements in 4 minutes. The animal was not observed to defaecate and she was unable to eat or drink. When the tongue was pulled out of the mouth, it was not voluntarily retracted. No abnormality was detected on thoracic auscultation. The pulse was of poor volume and the rate was 80 per minute. Respiratory rate was 32 per minute and rectal temperature was 98.4° F.

Haematological examination

Total cell counts, differential white cell count, P.C.V., E.S.R., haemoglobin, total serum protein, albumin per globulin ratio, serum alkaline phosphatase, serum bilirubin, blood urea, serum calcium, magnesium, inorganic phosphate and lead were all within normal range.

On January 31st, 1957, the condition of the cow had altered little. The animal was still able to sit up on its brisket. The pulse rate was 100 per minute and the respiratory rate was 30 per minute. Rectal temperature was 97° F. On February 1st, 1957, the animal, being moribund, was destroyed by intravenous magnesium sulphate.

Treatment

Five million international units of penicillin had been given daily during the course of the illness. Two g. streptomycin were given in addition on the first day.

Post-mortem

The autopsy revealed no macroscopic abnormality of the internal organs other than a moderate degree of congestion of the meningeal vessels.

Histological findings

The medulla oblongata showed "micro-abscesses" irregularly scattered through the substance of the grey and white matter. (Micro-abscess is the term applied to this lesion of microscopic areas of necrosis with focal demyelination and an infiltrate of polymorphs, macrophages and lymphocytes, which is considered almost pathognomonic for this disease.) Cuffing of the vessels in the substance of the brain was prominent. The cuff was composed mainly of lymphocytes and plasma cells with occasional macrophages and polymorphs. Perivascular cuffing was present in the pons and cerebellar brachii. Gram stained sections of the medulla showed the presence of a few micro-organisms resembling *E. monocytogenes*. Other organs showed no histological abnormality.

Bacteriology

An organism having morphological, cultural, biochemical characteristics and experimental pathogenicity similar to that of *Listeria monocytogenes* was isolated from the brain.

Case II

Two-and-a-half-year-old Cross Galloway bullock imported from Ireland 6 months previously.

History

Illness for 3 weeks with the presenting signs of partial anorexia and extreme dullness.

Clinical examination

The animal was salivating to excess, and showed no inclination to eat, but if food was placed in its mouth, it chewed slowly for a long period. The head was held low, and to the right. Bilateral ptosis of the eyelids was present. Both ears drooped noticeably. Unwillingness to move, a swaying gait, and a tendency to circle towards the right were noted. No abnormality was detected on thoracic auscultation. Ruminal movements were absent. Pulse was of poor volume, and the rate was 90 per minute. Respiratory rate was 28 per minute; and rectal temperature was 100.2° F. Haematological examination was carried out as for the previous case, but no abnormal levels were noted.

Little change was noted in the animal over the 3 succeeding days. It remained anorexic, was almost completely unable to drink, and was destroyed by intravenous magnesium sulphate.

Treatment

Five million international units of penicillin were given daily from time of admission.

Post-mortem

No lesions of thoracic or abdominal organs were present. A subcutaneous encapsulated chronic abscess, 6 cm. in diameter, was present at the angle of the left mandible. There was a 5 cm. diameter area of necrosis of the midbrain, in midline, with a localised purulent meningitis -involving the optic chiasma and pituitary gland.

Histological findings

Histological examination of the brain showed apart from the area of frank necrosis, round cell perivascular cuffing in the cerebellar brachii and medulla. Smears from the edge of the necrotic area revealed organisms with a morphology resembling *E. monocytogenes*.

Bacteriological findings

Primary cultures were negative. Suspensions of brain inoculated into mice intraperitoneally caused death in 24 hours. A further passage was made and the dead mice yielded organisms from pinpoint hepatic abscesses, having morphological, cultural and biochemical characteristics resembling those of *E. monocytogenes*.

It is to be noted that several workers have experienced difficulty in isolation of this organism from brain, and it is recommended that tissue should be kept at low temperature for several weeks prior to culture.

Discussion

In Britain only two reports of *E. monocytogenes* infection in cattle have been recorded. Harbour (1941) in Wales recovered the organism from a nine-day-old diarrhoeic calf that had ulcerative

abomasitis and a focal necrotic hepatitis at *post-mortem*. Wynn Jones (1954) recovered the organism from one of two heifers that had shown clinical signs of "circling" and had the histological brain lesions associated with this infection.

E. monocytogenes infection in cattle has been reported quite frequently from America since the first report of bovine encephalitis due to this organism was made by Jones (1934). The encephalitic form of this disease may show a variety of signs. Duration of illness may vary from a few days to several weeks but mortality in the reported cases approaches 100 per cent. The clinical signs of incoordinated gait, circling usually only in one direction, ptosis of eyelids, facial paralysis, pharyngeal paralysis and excessive salivation reflect the damage to cranial nerve roots, from the destructive lesion of medulla and pons.

Olson (1954) states that some cases may show only pharyngeal paralysis but that even in such cases prognosis is poor.

The organism has been incriminated also as a cause of abortion by American workers. Smith (1955) described a case of abortion in a three-year-old heifer in the sixth month of pregnancy, and cited 7 previous reports of abortion due to *E. monocytogenes* infection. From the published cases abortion can occur at any stage of pregnancy.

Septicaemia and death in young animals is another form of the disease that has been noted in America. Pounden (1947) recorded sudden deaths in four-month-old calves associated with *E. monocytogenes* infection, the animals having been penned in a yard that had previously held sheep affected with this disease.

Diagnosis

The encephalitic form of the disease may be tentatively diagnosed on the clinical signs but confirmation requires a bacteriological and histopathological examination of the C.N.S. The finding of micro-abscess formation and perivascular cuffing in sections taken from the medulla oblongata is regarded as almost pathognomonic for this condition.

Differential diagnosis

Clinically some similarities to the encephalitic form of the disease may be seen in louping-ill, lead poisoning, Aujeszky's disease, solitary brain abscess, tuberculous meningitis, suppurative meningitis secondary to a pyogenic infection of cranial sinuses or middle ear, acquired hydrocephalus, and the nervous form of ketosis.

Lead poisoning usually shows more striking signs of nervous irritability such as convulsions, clonic spasms and mania. Such signs are only occasionally seen in *E. monocytogenes* infection. Chemical estimation of lead levels in blood and tissues offers a reliable means of diagnosis.

Louping-ill is confined to tick-infested areas and likewise to certain seasons of the year. Whereas *E. monocytogenes* infection is generally fatal within 10 days, louping-ill tends to take a longer course. While there is a complement fixation test for louping-ill, no satisfactory serological test for *E. monocytogenes* has been described.

An indication of suppurative meningitis may be given by the obvious presence of an infected sinus or external ear and by the finding of a neutrophilia on blood examination. This may occur with cerebral abscess. Coenuriasis and tumour may be expected to run a slower more insidious course but may at times give rise to acute signs. Acquired hydrocephalus, an exceedingly rare condition, might also be impossible to differentiate on clinical grounds from *E. monocytogenes* infection.

Treatment

In the United States, cases diagnosed clinically as *E. monocytogenes* have been treated successfully by penicillin and sulphonamides (Jensen & Mackay, 1949) and streptomycin and oxytetracycline* (Anderson, 1952). To be of value, these drugs must, it is thought, be given before prostration develops. In the present case, penicillin and streptomycin appear to have been of no therapeutic use.

As source, mode and incubation period of infection are known at present, no useful advice on prevention of this disease can be given. Asahi *et al.* (1957) suggest that the organism invades the oral or nasal mucosae and travels *via* the trigeminal nerve to the brain stem. Most recorded cases have been sporadic but the real incidence of bovine infection in Britain is unknown. Cases may well have been overlooked as a confirmed diagnosis depends on bacteriological and histological findings.

Acknowledgments.—We wish to express our thanks to Mr. M. Grindlay for carrying out the bacteriological examinations, to Dr. J. T. Stamp of the Moredun Institute, Edinburgh who performed the complement fixation test for louping-ill, and to Dr. W. F. H. Jarrett for helpful advice and criticism.

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* Terramycin.

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A Survey and Review of the Causes of Mortality in British Birds and the Significance of Wild Birds as Disseminators of Disease—Part II

BY

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SUMMARY—Part II. A Review of Specific Diseases not Diagnosed in the Survey and the Significance of Wild Birds as Disseminators of Disease.

1. *Diseases described by other authors, but not diagnosed in this survey are discussed where there is evidence that feral birds may become infected or act as mechanical carriers of the disease. The following diseases are dealt with in this section: anthrax, botulism, coligranuloma, listeriosis, salmonella infections (except* S. typhi-murium*), streptococcosis, infectious avian encephalomyelitis, infectious laryngotracheitis, foot-and-mouth disease, fowl paralysis complex, Newcastle disease, ornithosis, and vesicular dermatitis.*

2. *The paper is concluded by attempting to assess which species of birds are most important in the dissemination of disease and how disease may be carried.*

A Review of Specific Diseases Not Diagnosed in the Survey and the Significance of Wild Birds as Disseminators of Disease

IN addition to the specific diseases diagnosed in this survey and dealt with in Part I, others have been reported infecting free-living birds. There is also evidence that birds may act as mechanical carriers of some diseases without actually being infected.

These diseases are discussed below, but only when associated with British species of birds in the British Isles, Europe, and North America.

Bacterial Diseases

Anthrax

Causal organism—*Bacillus anthracis.*

Wild birds have been incriminated in the spread of anthrax, but as birds are usually resistant to this disease, they can probably only act as mechanical carriers.

Shrewsbury and Barson (1954) isolated *Bacillus anthracis* from the crop contents of nearly 2 per cent. of house sparrows which they examined and considered that if this ratio represented the incidence of the disease in the total sparrow population of England, the organisms must be more widely and heavily distributed than the relative rarity of the disease among animals suggests.

Botulism

Causal organism—*Clostridium botulinum.*

In North America, botulism has been reported on numerous occasions, causing heavy mortality in many species of wild birds, particularly waterfowl. The disease, however, does not appear to exist in this country.

Coligranuloma or Hjärre's Disease

Causal organism—*Escherichia coli.*

Athough this disease was not seen during this survey, *E. coli* organisms were commonly isolated, but in no case were they considered pathogenic. Goyon (1957) described the disease in a captive partridge in France, and Jennings and Soulsby (1957) reported an infection of *E. coli* in a heron, but did not state if this was in the form of a septicaemia or coligranuloma.

Listeriosis

Causal organism—*Listerella monocytogenes.*

There appears to be only one report of this disease in wild birds in this country, Jennings (1955) reporting the infection as the probable cause of death in three young whitethroats.

Levine (1952b) quoted Lilleengen (1942) who diagnosed the disease in a capercailzie at a Swedish game farm.

Salmonella Infections

Pullorum Disease

Causal organism—*Salmonella pullorum.*

The only definite reports of natural infections in wild birds in this country appear to be those by Dalling *et al.* (1928) in sparrows and Jennings (1954) in a magpie. The sparrows had been caught in poultry runs in which chicks had succumbed to the infection.

Various authorities have reported natural outbreaks amongst pheasants in America including Belding (1955) who described a survey carried out to determine the incidence of the disease in "wild pheasants (*Phasianus colchicus torquatus*)." The organisms were isolated in 5 out of 65 birds examined. Characteristic lesions were not present and the pheasants appeared quite healthy and in good condition.

Fowl Typhoid

Causal organism—*Salmonella gallinarum.*

The disease was not diagnosed in this survey, in spite of the fact that wild birds were examined from farms where poultry were infected.

Jennings (1954) reported the infection in a curlew, associated with a heavy cestode burden, and Harbourne (1955) discussed the importance of wild birds

in the spread of fowl typhoid, reporting the disease in seven rooks and a pigeon which were killed in an area of Yorkshire where the disease was endemic. Harbourne diagnosed the disease in a partridge which was caught alive and obviously sick. He also succeeded in artificially infecting jackdaws and rooks with fowl typhoid.

Other Salmonella Infections

In this country *S. thompson* has been isolated from the feet and feathers of a rook by Harbourne (1955).

Salmonella infections have also been reported by Jennings (1955) in a black-headed gull and by Clapham (1957) in two mallards and a barnacle goose, but the types were not stated.

Streptococcosis

Causal organisms—*streptococci* spp.

Although occasionally, during this survey, these organisms were isolated on bacteriological examination, in no case were they considered to be responsible for the death of the bird.

Jennings (1954) isolated strongly haemolytic streptococci from the heart blood and bone marrow of a great tit and starling. The same author in 1955 reported streptococcal pneumonia as the probable cause of death in a robin.

Virus Diseases

Infectious Avian Encephalomyelitis of Domestic Fowls or Epidemic Tremor

Jennings (1954) reported avian encephalomyelitis as the probable cause of death in 13 great tits and 12 blue tits kept under experimental conditions but from the information he provided, it is only possible to regard this as a tentative diagnosis.

Again in 1956 when Jennings and Soulsby reported " encephalitis (probably viral)," as the probable cause of death in 2 blue tits, they presumably referred to this disease.

Infectious Laryngotracheitis

This disease is said by Hofstad (1952) to have a distinct host specificity; chickens being the usual host. It is unlikely, therefore, that wild birds can contract the disease.

Hofstad stated, however, that pheasants are susceptible to the virus by natural infection or by inoculation, quoting Kernohan (1931) and Hudson and Beaudette (1952).

Foot-and-Mouth Disease

A great deal has been written on the subject of wild birds as carriers of this disease, especially from the continent of Europe, and although circumstantial evidence is strong, the case against birds has not been proved.

As birds are normally resistant to the infection they are likely to act only as mechanical carriers. Starlings, owing to their habits of frequenting pastures and consorting with livestock, are usually regarded as the most likely disseminators of the disease, but Wilson and Matheson (1952) have also drawn attention to the possible rôle of gulls, because not only do some of these species often roost on pasture land but also commonly scavenge on rubbish dumps and therefore may at times have access to infected swill.

Fowl Paralysis Complex

This condition was undiagnosed in the survey, although suspected on macroscopical examination in a hen pheasant, in the form of discrete lymphoid leucosis involving the liver; autolytic changes, however, made this organ unsuitable for histological examination.

TABLE II

Disease	Species
Bacterial	
Anthrax	Mechanical carrier : House sparrow.
Botulism	Numerous species especially waterfowl (in North America).
Coligranuloma	Partridge (C).
Listeriosis	Capercailzie or capercaillie (*Tetrao urogallus*) and whitethroat.
Pullorum disease	Bittern (*Botaurus stellaris*), " quail," pheasant, " pigeons," " turtle doves," magpie, greenfinch, goldfinch, bullfinch, chaffinch, and " sparrows."
Fowl typhoid	" Swan," " grouse," partridge, pheasant, curlew (*Numenius arquata*), " pigeon " (free living), rook and " sparrow."
Salmonella thompson	Mechanical carrier : Rook.
Streptococcosis	Great tit (*Parus major*), robin and starling.
Virus	
Infectious avian encephalomyelitis	Great tit and blue tit (*Parus caeruleus*) ; suspected infection.
Infectious laryngotracheitis ...	Pheasant.
Foot and mouth disease	Gulls and starlings suspected as the most important mechanical carriers.
Fowl paralysis complex	Shelduck (*Tadorna tadorna*), partridge, pheasant, kittiwake (*Rissa tridactyla*), wood pigeon, little owl (*Athene noctua*).
Newcastle disease	Gannet, cormorant (*Phalacrocorax carbo*), shag (*Phalacrocorax aristotelis*), osprey (C) (*Pandion haliaëtus*), pheasant, pigeon (C) (*Columba livia*), wood pigeon (C), starling and " English sparrows." Quail and partridges also reported susceptible.
Ornithosis	Fulmar petrel, mallard, pheasant, sanderling (*Crocethia alba*), lesser black-backed gull (*Larus fuscus*), herring-gull, common tern (*Sterna hirundo*), little tern (*Sterna albifrons*), feral pigeon, wood pigeon, collared dove, magpie, great tit, goldfinch, bullfinch and house sparrow.
Vesicular dermatitis of sea-birds ...	Manx shearwater, herring-gull, common gull and black-headed gull.

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Jennings (1954) reported visceral lymphomatosis as the probable cause of death in a shelduck and a little owl with involvement of the liver and kidneys, but he did not describe the lesions in detail or the method of diagnosis. The same author described a case of neural lymphomatosis in a partridge, and Jenkins (1955) also reported "fowl paralysis," presumably of this type, in this species.

Other reports of the fowl paralysis complex in wild birds in this country are Jennings (1955), "leucosis" in a kittiwake and a wood pigeon, and McDiarmid (1956), "lymphomatosis" in partridges and pheasants associated with domestic poultry, but the authors gave no further details.

Newcastle Disease (Fowl Pest)

In only one case, namely a house sparrow, was the disease suspected during the survey, the bird having been found dead on premises where poultry were infected. Inoculation of eggs and susceptible domestic fowls in the usual way with a suspension of organs from the bird failed, however, to confirm the presence of the infection.

There is ample evidence, nevertheless, that sparrows and other species of wild birds may contract this disease. Gustafson and Moses (1953), in America, showed that the disease could be transmitted from infected chickens to immature English sparrows and vice versa. They also reported the natural occurrence of the disease in a captured ailing sparrow.

Also in America, Gillespie *et al.* (1950), isolated the virus from a 12-day-old nestling starling which had not left the nest. It was not known if Newcastle disease was present in the vicinity and neither was it possible to obtain the parent birds which presumably infected the nestling.

Wilson (1950b) isolated the virus from a gannet whilst investigating an outbreak affecting poultry in the Orkneys and Western Isles of Scotland. The following year Blaxland (1951) reported the infection in cormorants and shags, associated with the same epidemic. It was believed that these sea-birds became infected by scavenging on infected carcases or viscera of diseased poultry which had been thrown into the sea by the islanders. These sea-birds, and perhaps other species that scavenge, were therefore probably an important factor in spreading the disease at that particular time.

Gillespie (1952) reported the infection in a cock pheasant found dead in a field where the disease was confirmed in domestic poultry kept on free range. At the time of this outbreak, which was in Norfolk during October, 1947, he stated that it was not infrequent to find that the disease appeared in birds kept under this system of management and speculated to what extent game birds might be active carriers.

Ornithosis (Psittacosis)

Although ornithosis has been diagnosed by the author in domestic pigeons which were allowed free flight from their loft in the customary way, it was not confirmed in a wild species. Andrewes and Mills (1943) found the infection in feral pigeons in the Westminster district of London, and recently Hughes (1957) stated that both racing and feral pigeons trapped in various parts of Liverpool have been shown to be infected, thus constituting a potential source of danger to human beings.

The classical case of the disease in wild birds, however, was the outbreak about 1930 in the Faroe Islands reported by Rasmussen (1938) and subsequently confirmed as psittacosis by Haagen and Mauer (1938), when deaths occurred in the women inhabitants, who had plucked and dressed fulmar petrels for food.

About 20 years later Miles and Shrivaston (1951) again provided evidence of recent infection in adult and immature fulmars in the Faroes. The same authors also isolated a strain of ornithosis (differing from the parrot and pigeon strains) from juvenile herring-gulls and found serological evidence of infection in lesser black-backed gulls, on Skomer Island, Pembrokeshire.

Pollard (1947) demonstrated in America serological evidence of infection among species of shore birds including three British species, namely sanderling, least tern (*i.e.* little tern), and common tern.

Jennings and Soulsby (1956) reported the disease as the probable cause of death in 2 wood pigeons, but gave no further details. It is unlikely, however, that ornithosis is common in wood pigeons or other species of birds which are not markedly gregarious when nesting. Heavy concentrations of breeding birds, with the resultant unhygienic conditions, greatly facilitate the spread of the disease. Feral pigeons in cities often nest in colonies and therefore are commonly infected, whereas wood pigeons, although gregarious during the winter, are not markedly so in the breeding season and breeding colonies are never as dense and concentrated as those of feral pigeons, fulmar petrels, gulls, and many other sea-birds.

Meyer (1952) in America stated that at least 20 species of birds have been infected spontaneously, and that common to all is the high incidence of prolonged latent infection.

Vesicular Dermatitis of Sea-Birds

This disease was first described by Dane (1948) and shortly after by Miles and Stoker (1948) who named it puffinosis because it was found infecting the sea-birds known as manx shearwaters (*Puffinus puffinus*), on Skomer Island, Pembrokeshire.

The infection caused heavy losses amongst the shearwaters and was characterised by blisters on the webs of the feet and in some cases by conjunctivitis. At least 90 per cent. of the birds showing clinical symptoms died.

On *post-mortem* examination in some cases there were no definite lesions but in others round patches of consolidation were present in the lungs.

Miles and Stoker (1948) also reported evidence of the infection in juvenile herring-gulls and succeeded in transmitting the disease from shearwaters to ducklings by scarification of the webs of the feet. In view of the susceptibility of the latter species, this disease is worth consideration when investigating outbreaks of disease in ducks, especially in coastal areas.

The disease has not been recognised at this laboratory, but Jennings and Soulsby (1956) have reported a condition which they stated closely resembled this disease, causing an epidemic in common gulls in Cumberland and also an epidemic involving black-headed gulls.

Discussion

Until further work has been carried out on the causes of mortality in wild birds it is difficult to assess their importance as disseminators of disease, but it is clear that some species, depending on their abundance and habits, play a more important rôle than others. It is also likely that some are more susceptible to certain diseases than others, although it is not known to what extent host specificity is a limiting factor in the spread of disease by feral birds.

Primary epidemics of disease in wild birds appear to be uncommon. There are few authentic reports of disease in free-living species being responsible for the infection of domestic stock or man, although one notable example was the outbreak of psittacosis in the Faroes, when women were infected by plucking and dressing young fulmar petrels for food.

Potentially, the most important species in the dissemination of disease are:—

1. The familiar birds which associate with domestic stock or man and frequent farm-yards, pastureland, gardens, and parks.

2. Game birds, waterfowl, and other species eaten by man, some of which are sometimes reared artificially in close proximity to domestic animals.

3. Gregarious birds, which roost or breed in densely populated communities and often in unhygienic conditions, thus facilitating the spread of disease amongst members of their own species and subsequently perhaps to other wild birds and domestic stock. Examples include many types of sea-birds, feral pigeons, and starlings.

4. Carrion feeders, *e.g.* many birds of prey, gulls, and some members of the crow family, *i.e. Corvidae*. It is probable that at times these birds may feed on diseased carcases.

5. Migratory birds, which are more likely to assist in the dissemination of disease than sedentary species such as house sparrows, although the latter can play a part in the spread of disease locally.

Wild birds may carry disease in two ways:—

1. Pathogenic organisms may be excreted by diseased, or in some cases by healthy birds. It is likely that at times birds may ingest the causal organisms of some diseases without becoming infected and later void them, still in a virulent form, thereby acting as mechanical carriers.

2. Pathogens may also be carried mechanically on the feet or other external surfaces of the body, without the bird necessarily being infected. The distance that diseases can be carried in this manner is limited, however, and not only depends on the resistance of the disease organisms to environmental factors such as temperature and desiccation, but also on the habits of the species of birds that are contaminated. Aquatic birds or those which frequently bathe are less likely to carry infections mechanically in this way for long periods than are birds which seldom enter water.

It is obvious that before wild birds are incriminated in the spread of any disease, numerous factors have to be carefully considered.

Acknowledgments.—The author is indebted to many people, too numerous to mention by name, who kindly provided birds for examination.

Although the majority of birds included in this survey were examined by the author, he is indebted to his colleagues in the poultry department of this laboratory, for permission to include those examined before February, 1956, and subsequently for their help and co-operation.

Special thanks are offered to Messrs. J. D. Blaxland and R. B. A. Carnaghan, MS.R.C.V.S., for their constructive criticisms in the presentation of this paper.

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Otodectic Mange in the Dog

BY

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AND

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SUMMARY.—The examination of 100 unselected and untreated cases of otitis externa in the dog showed that 36 were due to Otodectes cynotis *infestation. Data on age, sex, and breed incidence are given. The effects of temperature on the occurrence of the mites and possible sources of contagion are also noted.*

THERE are few references in the literature dealing with the occurrence of *Otodectes cynotis* in dogs. Kaufmann and Frost (1949) state that 56 per cent. of 50 consecutive cases of dogs suffering from otitis were found to have otodectic mange. Woodrow (1953) stresses the importance of mange in dogs as does Jennings (1953) who also draws attention to the possibility of cross infection between cats and dogs. Gustafson (1955) notes that over a 5-year period only 3.2 per cent. of all cases of otitis in dogs from the districts around Stockholm had a mite infection.

This paper deals with observations made on 100 consecutive cases of otitis externa occurring in dogs brought to the Beaumont Animals' Hospital, Royal Veterinary College, London. It has been the opinion of one of us (C.F.) that infection of the external auditory canal by *O. cynotis* is commoner than is generally supposed, and the object of the survey was to determine the incidence of the mite in dogs and also to discover if there is any possible source of contagion from cats.

Materials and Methods

The dogs included in this survey were not selected and were those presented to one of us (C.F.) for clinical examination. None had been treated at the time of examination. The majority of the animals came from districts surrounding the Royal Veterinary College. Each of the 100 dogs was a domestic pet, and in all cases, except 2, their owners complained of otitis or pruritus in the animal. The first exception was a dog not showing symptoms recognisable by the owner and which lived in close contact with another dog that was presented for treatment for otitis. Both animals were proved to harbour mites. The second exception was unusual in that the dog lived in close association with a cat, which was not in contact with other cats. This cat, presented for examination, had *O. cynotis* infection, and when the owner was advised to have the dog examined, it also showed a similar infection. Whether the infection spread from the cat to the dog, or *vice versa*, is a matter of conjecture.

A clinical and a laboratory method of examination were used. The clinical method consisted of thorough examination of the ducts of both ears with the auriscope, and no result was considered positive unless at least one parasite was seen to move within the auditory canal. The laboratory method consisted in taking samples of scrapings from the external auditory meatus and examining them for the presence of mites under a binocular dissecting microscope. Where there were no visible mites, the material was soaked in cold, 5 per cent. potassium hydroxide solution for 12 hours at room temperature, after which the detritus was washed in water by repeated centrifugation and decanting the supernatant fluid. The concentrate was then examined for mites by the flotation-centrifugation method commonly used for detecting nematode eggs and using concentrated sugar solution.

Symptoms

The average duration of symptoms in the affected dogs was about 3 weeks before examination was made. Exceptions were 2 cases with no symptoms, 2 with unknown histories, and one case of neglect where the dog had a two and a half years' history of untreated otitis since its purchase as a puppy. Symptoms varied from mild chronic to hyperacute irritation.

Results

In the 100 consecutive cases of otitis externa examined, 90 showed the condition bilaterally and 10 unilaterally. The presence of mites was demonstrated in 36 dogs, of which 35 had a bilateral and one a unilateral infection. The animal with the unilateral infection of its right ear had been in contact for only 4 months with a cat that was proved to be infected with *Otodectes*. Other than the possibility that contagion had not had time to spread to the left ear, no explanation of this unilateral case can be put forward.

It will be seen from Table I that 36 dogs showing otitis externa proved to be infected. The use of both methods of examination revealed 25 cases of infection; 4 more were diagnosed by auriscopic examination only, and a further 7 by the parasitological method alone. The use of both diagnostic

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procedures increases the chances, as would be expected, of finding positive cases rather than when one of the methods alone is employed.

Amongst the 64 dogs that showed no evidence of mite infestation by either or both methods of diagnosis, 43 were known to have had no contact with cats. Of the remaining 21 dogs which did have contact with cats, 6 lived in houses with cats that were found to be suffering from mite infestation; the contact cat could not be examined in respect of the remaining 15 dogs.

Table I also shows that dogs of all ages were affected and that there was more otitis in animals under one year old than in any other age group. Almost half the puppies seen suffered from ear mange.

Of the 100 dogs examined, 55 were males and 45 were bitches. The number of males harbouring mites was 24 or approximately 44 per cent., and the number of bitches affected was 12 or approximately 27 per cent. The higher incidence of infection in males is inexplicable and probably of no significance.

If it be accepted that, in southern England, the period November to April is colder than that of May to October, then reference to Table II shows that during the cold half of the year, 23 dogs out of 43 examined showed mite infestation, or approximately 54 per cent. were positive cases. During the warm half of the year 13 dogs out of 57 examined harboured mites, or approximately 23 per cent. were positive cases. During the winter months, in this series of dogs examined, approximately every other case of otitis was associated with mite infestation, whereas in the summer months, when it was to be expected that there would be more dogs presented for examination with otitis externa, only one out of every 4 dogs had a mite infestation. It may well be that the habits of *O. cynotis* are similar to those of *Psoroptes communis* which is less active and produces fewer eggs during the summer, whereas later in the year, when the first frosts come, it becomes more active and lays more eggs.

Records of the breeds of dogs seen and infested were kept as follows: of the 27 mongrels, 18 Spaniels, 21 Poodles, 13 Terriers and 21 other dogs examined the numbers that harboured mites were respectively 13, 7, 4, 5 and 7. As may be anticipated with a contagious disease there is little suggestion of any breed predilection.

Enquiries into the possible sources of contagion were made, and in the case of 12 dogs harbouring mites it was considered likely that they caught the disease from their dams. With one exception, all these dogs were under 14 months of age. The exception was the neglected case of a two and a half years old mongrel untreated since its purchase as a puppy and to which reference has already been made. Eighteen of the mite-infested dogs were known to have been living beside cats and, of those contact cats which were examined, only one had no detectable mites and was unlikely to have introduced the contagion. Amongst the 12 dogs that may have caught the disease from their dams, and the 18 dogs in contact with cats were 2 infected puppies which could have been infected from either dam or cat. Amongst the remaining 6 infected dogs, the possible source of contact was unknown for 2, owing to insufficient history of the cases; and for another 3,

TABLE I

AGE INCIDENCE IN DOGS OF *Otodectes*

Age :—	Under 6 months	6 to 12 months	1 year	2 years	3 years	4 years	5 years	6 years	7 years	8 years	9 years and over	Total
Auriscopic and microscopic examinations positive	6	6	2	3	2	1	1	0	1	3	0	25
Auriscopic examination alone positive	0	1	1	1	0	0	0	0	0	0	1	4
Microscopic examination alone positive	0	2	1	0	0	2	0	1	0	1	0	7
Total positive cases	6	9	4	4	2	3	1	1	1	4	1	36
Auriscopic and microscopic examinations negative ...	8	9	10	9	6	3	5	4	2	5	3	64
Total cases	14	18	14	13	8	6	6	5	3	9	4	100

TABLE II

MONTHLY INCIDENCE IN DOGS OF *Octodectes*

	January	February	March	April	May	June	July	August	September	October	November	December
Total dogs examined	9	4	9	5	6	12	8	12	8	11	10	6
Number of dogs with mites ...	5	2	5	1	2	1	1	3	2	4	5	5
Per cent. infested	56	50	56	20	33	8	13	25	25	36	50	83

XUM

which had no known contact with cat or dog; the sixth animal was known to have had contact with another affected dog.

Discussion

The auriscopic and parasitological methods of diagnosis have their limitations. Careful auriscopic examination failed to demonstrate the presence of mites in 7 dogs although the infection was found on parasitological examination. Similarly, 4 dogs showed mites in the ear by the use of the auriscope but the scrapings produced negative results when submitted to microscopical examination. The obstacle to a satisfactory diagnosis is difficult to overcome in the live animal. It is only at examination *post-mortem* that the ear can be incised and the external auditory meatus exposed with a view to searching for mites. Even if it were possible to examine satisfactorily the ear in the live animal there would still remain those cases of otitis which were possibly initiated by mite infestation and, at a later stage, become suppurative, but without showing the presence of mites. Two dogs (Cases No. 46 and 72) supply evidence that ear mange can become complicated, as their owners complained, in each case, that the animal had otitis externa of the right ear and the symptoms were typical of acute suppurative otitis. At examination, however, no mites were seen in these right ears but they were found in the left ears. Once exudation and suppuration occur, the parasites are extremely difficult to detect and it would appear that the environment becomes so unsuited to their survival that the mites disappear or die.

It could be argued that dogs showing bilateral chronic exudative or suppurative otitis externa might well have had, at least in some cases, an initial mite infestation particularly when there is a supporting history of contact with other animals and where no other cause of the inflammation can be detected.

Of the 36 infected dogs, 31 had fewer than 3 detectable mites present in an ear, and this scarcity of parasites leads to the belief that there must be cases that are not diagnosed during many routine examinations. This is supported by the experience of one of us (B-J) who examined cadavers of dogs and cats from the same districts from which the present series of dogs came. The cause of death and presence or absence of clinical otitis were unknown for the animals but it was found that, in cats, the mites were generally obvious and present in reasonable numbers, whereas in most dogs the mites were few and difficult to demonstrate (Beresford-Jones, 1955). The remaining 5 infected dogs, which varied in age from 10 weeks to 8 years, showed numerous mites comparable with the usual clinical findings in cats. No reason can be put forward as to why, in this series, one out of approximately 7 dogs should exhibit a profusion of mites in the ears.

From the present survey and from the earlier one noted above, the findings tend to suggest that, in the districts from which the animals came, probably about half the cat population is affected with otodectic mange. The cat appears to be an ideal natural host for the mite and it is only in respect of a small proportion of affected animals that the owner seeks treatment. In the dog, however, although the parasites can live and multiply in the ear, they tend always to be irritant to such a degree that advice is sought. In contrast to the cat, the dog appears to be an unwilling host with a low tolerance to infestation. There is also some evidence that otodectic mange is contagious and intercommunicable between cat and dog. This survey shows that Otodectes is an important cause of otitis externa and may be even more prevalent than is revealed by the series of dogs that have been examined.

Acknowledgments.—To Dr. J. N. Oldham for helpful advice and encouragement.

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Whole Blood and Prednisolone in the Treatment of a Case of Lymphatic Leukaemia in a Scottish Terrier

BY
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THE condition of lymphatic leukaemia in the dog does not seem to be generally recognised and the following case is recorded because of its apparent rarity and the dramatic response to whole blood and prednisolone therapy.

Case Report

On September 25th, 1957, a male Scottish Terrier, aged 10½ years, was presented for examination with a history of increasing listlessness since March, 1957, dull gummy eyes, and swellings under the jaw. He had to be carried everywhere.

On examination all the superficial lymph glands were enlarged, hard, and freely movable, with no signs of heat or pain. The sub-maxillary glands were the size of tangerine oranges; the pre-pectoral and popliteal the size of golf balls. The spleen was not palpable. The temperature was normal.

A preliminary diagnosis of pseudo-Hodgkins disease was made and altered subsequently when the blood picture was known.

Treatment

Large doses of vitamin B_{12} (50 mg. iron-dextran*) were commenced. This treatment had been found to have a temporary beneficial effect in previous cases, when started early enough. On October 9th the dog showed no marked difference in condition and he still virtually refused to walk. Vitamin E, 50 mg. daily, was added as supportive therapy for

* Imferon: Bayer Products Ltd.

the heart and general circulation. On November 1st, this treatment had produced no improvement although it appeared to be preventing further progress of the disease. Therefore a transfusion of 125 c.c. whole blood, from a mongrel puppy aged 6 months, was given. Two to three hours later the dog showed signs of abdominal discomfort, vomiting, and extreme weariness. He slept all night and next day showed no symptoms that could be attributed to the transfusion. By November 3rd the lymph glands had subsided to the size of marbles. The dog's appetite had improved greatly and he was alert and intelligent. He had developed a great thirst and a craving for sugar. On November 4th he was very bright and active, walking and running freely for the first time. The eyes showed noticeably less exudate. On November 5th the lymph glands were non-palpable, except for the sub-maxillary which were pea-sized. By November 7th he was playing with other dogs and ran 350 yards without stopping. On November 11th the dog was still lively and active but enlargement of the sub-maxillary glands had recommenced. Blood samples were taken and submitted to Dr. O'Brien, Portsmouth Pathological Service.

Report 1

Haemoglobin 101 per cent.
Total Leucocytes 25,000 per c.mm.

	Differential Count	
Neutrophils ...	19,750 per c.mm.	79 per cent.
Lymphocytes ...	4,500 „ „	17 „ „
Monocytes ...	1,000 „ „	4 „ „

Platelets present.

On November 16th the dog's alertness was maintained, but some vigour had been lost during the previous 24 hours. A further transfusion of 50 c.c. whole blood was given. Two hours later the dog had a severe reaction with vomiting, abdominal discomfort, shivering, and heavy breathing. But the sub-maxillary glands had subsided so rapidly that they were non-palpable within 5 hours.

During the 48 hours previous to November 18th he was very dull, off his food, sick, and constipated. Liquid paraffin opened the bowels and there was immediate improvement, with a return to his previous alertness and good appetite.

On November 22nd, a second blood sample was sent to the haematologist.

Report 2

H.B. 95 per cent.
Total Leucocytes 35,000 per c.mm.

Neutrophils ...	14,000 per c.mm.	42 per cent.
Lymphocytes ...	18,900 „ „	54 „ „
Monocytes ...	1,400 „ „	4 „ „

Platelets present.

Dr. O'Brien stated that in man this blood picture would be suggestive of acute lymphatic leukaemia, and the diagnosis was accordingly altered to this disease.

As cortisone had been used with varying success for the condition in man, it was decided to try this drug, and the dog was put onto 5 mg. cortisone t.i.d. in tablet form.

By November 29th the dog was still alert and energetic, and the glands had shown no further enlargement.

On December 10th all the glands were non-palpable except the sub-maxillary which were the size of peas. Alertness was maintained but the eyes were still dull and the vision poor in dim light. 1.5 c.c. (15 mg.) prednisolone* was injected. A further blood sample was taken. The sub-maxillary glands subsided completely within 1 hour of the injection.

Report 3

Total Leucocytes 30,000 per c.mm.
Considerable numbers of normal neutrophils and platelets.
Large numbers of degenerate smear cells with many nucleoli—no other primitive cells seen.

By December 11th the eyes were clearer and the glands non-palpable. A further 1.5 c.c. prednisolone was injected and this was repeated daily until the end of January, 1958. A blood sample was taken on January 25th.

Report 4

H.B. 15.29.
Total Leucocytes 55,000 per c.mm.

Neutrophils ...	38,000 per c.mm.	70 per cent.
Lymphocytes ...	16,500 „ „	30 „ „

At the end of January, 1958, all glands had completely regressed except the sub-maxillary which were just palpable. The dog was very bright and energetic and the eyes had very nearly cleared.

During February, 1958, the injections of prednisolone were reduced to one every 2 days, and then given at lengthening intervals until, at the end of the month, the dog was receiving 2 per week. This regime was continued until, in early April, he was being given an injection every 5 days, and at the end of April one every 10 to 14 days. By May 7th he was having an injection only when it seemed necessary—approximately once every 2 to 3 weeks.

On April 23rd, a biopsy of one of the popliteal glands and a blood sample were taken by Mr. Churchill Frost of the Royal Veterinary College. It was difficult to locate the required gland owing to its small size. Mr. Irfan examined the specimens and reported that the findings were typical of chronic lymphatic leukaemia.

Report 5

Total White Cells 57,000.

Neutrophils: Stabs ...	1,140
„ Segmented ...	7,980
Lymphocytes	47,880

Discussion

There is no doubt that this Scottish Terrier is suffering from lymphatic leukaemia, and that the

* Deltacortril: Chas. Pfizer & Co. Ltd.

(*Concluded at foot of col. 1, p. 747*)

B.V.A. Congress, 1958 : Douglas, Isle of Man

September 21st to 26th

PROGRAMME

Sun September 21st

Time	Congress Social Events, etc.	Scientific Sessions	Tours, Excursions, etc.
	Note.—After the arrival of the Saturday boat from Liverpool, there will be no incoming boat on Sunday.		
p.m. 2.15	(Congress Office open till 6.0 p.m. for registrations —Palace Buildings)		Tour of T.T. Course *or* Angling Excursion
6.30	Choral Evensong, St. Thomas's Church		
8.0	**Council Meeting** (Villa Marina)		
8.30	Lancashire Division **"At Home"** (Villa Marina)		
10.0 to midnight	Film Show in aid of Benevolent Funds (Villa Marina)		

Monday, September 22nd

Time	Congress Social Events, etc.	Scientific Sessions	Tours, Excursions, etc.
a.m. 10.0	**Official Opening of Congress and Civic Welcome** from the Deputy Governor, Isle of Man, and the Mayor of Douglas Followed by :—		
11.0	**Opening of Trade Exhibition**		
12 noon	**Annual General Meeting and Presidential Address**		
p.m. 2.30		Metabolic diseases of the ruminant 1. In relation to husbandry *Author :* Mr. L. E. Hughes 2. Vitamin D in milk Fever *Author :* Mr. C. Weighton 3. Acetonaemia *Author :* Dr. J. R. Holmes *Chairman :* Mr. H. F. Hebeler *Openers :* Mr. D. T. Michael, Mr. G. B. Stubbs Skin conditions met with in small-animal practice *Author :* Mr. J. A. Dall *Chairman :* Dr. E. Cotchin *Opener :* Mr. E. F. Lewis	Ladies' Excursion to Ramsey via Snaefell. Visit to "Aristoc" stocking factory. Sulby Glen to Tholt-y-Will. Mooragh Park for Tea
5.0		Films "The Veterinary Surgeon in Civil Defence"	
8.0	**Mayor's Reception and Dance** (Villa Marina)		

Tuesday, September 23rd

Time	Congress Social Events, etc.	Scientific Sessions		Tours, Excursions, etc.
a.m. 9.30		Salmonellosis in animals *Author :* Dr. A. Buxton *Chairman :* Prof. E. G. White *Opener :* Mr. H. I. Field	Nervous diseases in the dog *Author :* Mr. E. M. Pittaway *Chairman:* Mr. S. Jennings *Opener:* Mr. W. T. Harrow	
10.30				Ladies' Annual General Meeting, followed by coffee
12 noon		**Plenary Session** **Pre-natal Transference of Antibodies** *Author :* Prof. F. W. R. Brambell *Chairman :* Mr. A. Thomson		
p.m. 2.30				Ladies' Excursion to Peel City and Castle, via St. John's and Tynwald Hill, Fish Hatchery, Michael ; return via Glen Helen. Grainger's Café, Peel, for tea
		Differential diagnosis and control of respiratory diseases of poultry *Author :* Dr. H. P. Chu *Chairman :* Dr. G. O. Davies *Opener :* Dr. F. T. W. Jordan	Mycotic Dermatitis of sheep in Britain *Authors:* Mr. P. Austwick & Mr. E. T. Davies *Chairman :* Mr. H. E. Roberts *Opener :* Mr. G. B. S. Heath	
5.0		Films : " Veterinary Anaesthesia " and " Caesarean section in large animals "		
8.0 to 1 a.m.	**Ladies' Guild Dance** (Villa Marina)			

Wednesday, September 24th

Time	Congress Social Events, etc.	Scientific Sessions		Tours, Excursions, etc.
a.m. 9.30		A.I. of cattle : Its development and future *Author :* Mr. G. F. Smith *Chairman :* Mr. J. Moss *Openers :* Mr. D. H. L. Madden Mr. J. Bruford	The cystic hyperplasia pyometra complex in the bitch *Author :* Mr. C. Dow *Chairman :* Mr. A. C. Shuttleworth *Opener:* Mr. R. H. Clover	
10.30				Ladies' Excursion — Port Erin Fish Hatchery, Port St. Mary to Cregneish and the Sound
12 noon		**Plenary Session** **Livestock Improvement in Britain** *Author :* Prof. M. M. Cooper *Chairman :* Mr. E. R. Callender		
p.m. 2.15		Films of general interest	**Demonstrations** at I.o.M. Board of Agriculture and Fisheries Experimental Farm 1. Artificial insemination (Mr. G. F. Smith) 2. Meat inspection techniques (Mr. J. M. Olivant) 3. Mycotic dermatitis (Mr. P. K. C. Austwick)	Visit to the I.o.M. Board of Agriculture and Fisheries Experimental Farm for Exhibition of Manx tweeds, sheep, cats, and kipper-making. Afternoon tea provided by the Board at 4.30 p.m.
7.45 for 8.0	**Banquet** (Villa Marina)			

Thursday, September 25th

Time	Congress Social Events, etc.	Scientific Sessions		Tours, Excursions, etc.
a.m. 9.30		Diseases of the external auditory meatus in the dog and cat *Author :* Miss J. O. Joshua *Chairman :* Dr. W. R. Wooldridge *Opener :* Mr. T. C. Denholm	The role of the veterinary surgeon in public health *Author :* Mr. C. G. Allen *Chairman :* Mr. W. Tweed *Openers :* Dr. J. M. Ross Mr. H. E. Bywater	
10.30				Ladies' Excursion to Manx Museum escorted by R. B. Moore, Esq., O.B.E.
12 noon		**Plenary Session** **The Global Picture of Animal Disease** *Author :* Sir Thomas Dalling *Chairman :* Mr. J. McC. Ingram		
p.m. 2.15				Golf Competition (Pulrose Links). Organiser : Mr. R. H. Hawkins
2.30		Disorders of the lactating sow and new-born pig *Author :* Mr. N. H. Brooksbank *Chairman :* Mr. D. Oliver *Opener :* Dr. D. Luke	Fore-limb lameness in the horse *Author :* Dr. A. C. Fraser *Chairman :* Mr. T. S. Anderson *Opener :* Mr. J. S. M. Cosgrove	Ladies' Excursion via Manx Electric Railway Coastal run to Ramsey (1¼ hours each way) *or* (Weather permitting) Optional Ladies' tour to summit of Snaefell via Mountain Railway
5.0		Films by kind permission of the U.S.A.F. Veterinary Corps		
8.0	**Reception by Chairman and Members of I.o.M. Board of Agriculture and Fisheries**(GaietyTheatre)			

Friday, September 26th

Time	Congress Social Events, etc.	Scientific Sessions	Tours, Excursions, etc.
a.m. 9.30		The responsibilities of the veterinary surgeon *Author :* Mr. C. C. Stevens *Chairman :* Mr. H. Sumner *Opener :* Dr. J. K. Walley	
10.30			Ladies' Excursion to Castle Rushen
12 noon		Congress Photograph	
p.m. 2.30		Dystokia in the Bovine Animal *Author :* Dr. L. G. Anderson *Chairman :* Prof. J. G. Wright *Opener :* Mr. H. Holroyd	Ladies' Excursion : Mystery Tour. Afternoon tea provided Ellerslie Farms' Ltd.
5.0	**Adjourned Annual General Meeting and Installation of New President Followed by the Council Meeting**		
8.0 to 1 a.m.	**President's Reception**		

News and Comment

ANNUAL CONGRESS—BUS SERVICE

Arrangements have been made with the Transport Department of Douglas Corporation for a bus service to be provided to fit in with the various meetings and social functions of the Congress. These will cover the entire period of the Congress and a contract ticket will be obtainable from the Congress Office in Douglas at a cost of 7s. 6d.

These contract tickets will be valid for all special buses, as well as the normal service, and buses will run to the following time-table:—

Daily from Fort Anne, The Villiers (South end of Promenade), and Milnes Waverley (North end of Promenade)

		Return from Palace	*Return from Palace*	*Return from Palace*
Monday	9.15 a.m.	1.0 p.m.	2.0 p.m.	6.0 p.m.
Tuesday	9. 0 a.m.	1.0 p.m.	2.0 p.m.	6.0 p.m.
Wednesday	9. 0 a.m.	1.0 p.m.	2.0 p.m.	6.0 p.m.
Thursday	9. 0 a.m.	1.0 p.m.	2.0 p.m.	6.0 p.m.
Friday	9. 0 a.m.	1.0 p.m.	2.0 p.m.	6.0 p.m.

Evenings from Fort Anne, Milnes Waverley, and Villiers

	Return from Villa Marina
Sunday 6.10 p.m. to St. Thomas Church	11.30 p.m.
Monday 7.45 p.m. to Villa Marina	12 midnight
Tuesday 7.45 p.m. to Villa Marina	1 a.m. (Wed.)
Wednesday 7.30 p.m. to Villa Marina	11 p.m.
Thursday 7.30 p.m. to Gaiety Theatre	11 p.m. from Gaiety
Friday 7.45 p.m. to Villa Marina	1 a.m. (Sat.)

The fare payable by anyone using the late night buses and not holding a contract ticket will be 6d.

Whole Blood and Prednisolone etc.—*Concluded.*

initial treatment by whole blood transfusion started to improve his health. However, it is the use of prednisolone that has been responsible for the dog's remarkable return to general health. A puzzling feature is that, despite his apparent well being, and the complete regression of the lymph glands, the lymphocyte count continues to rise.

Acknowledgments.—My grateful thanks are due to Dr. O'Brien of the Portsmouth Pathological Service for his initial blood analyses. To Mr. G. C. Knight, F.R.C.V.S., for his interest, to Mr. Irfan, M.R.C.V.S., for his interest and help, and to Mr. Churchill Frost, M.R.C.V.S., who performed the biopsy, and to Messrs. Chas. Pfizer & Co. Ltd., who donated the prednisolone, and without whose generosity the cost of treatment would have been prohibitive.

Addendum

August 26th, 1958. No injection given over last 6 weeks. Superficially the dog appears to have made a complete recovery but a further blood test has been taken.

September 3rd. Blood sample not suitable for differential leucocyte count owing to postal delays, but total white blood count has dropped to 19,000 per cu. ml. and the haemoglobin is 15.2 g. per 100 ml.

CONGRESS NOTES

Advance copies of Congress papers were posted to those who applied for them on Thursday last. A few papers were received from the authors too late for this posting and they will be available in the Isle of Man or will be dispatched to members who are not attending in the next few days.

Congress delegates are asked to register at the office as soon as may be convenient to them after their arrival on the island. They will then be provided with the special souvenir programme (presented by Imperial Chemical Industries Ltd.), and with the late papers.

B.V.A. CONGRESS GOLF COMPETITIONS

Arrangements have been made for competitions for the Simpson Trophy for men and the Dunkin Trophy for ladies to be played over the Pulrose Golf Course on the afternoon of Thursday, September 25th. Intending competitors are asked to notify Mr. R. H. Hawkins, M.R.C.V.S., of 3, Hill Street, Douglas, Isle of Man, as soon as possible.

NEWCASTLE DISEASE

It is reported that scientists of the United States Department of Agriculture have developed a vaccine against Newcastle Disease. The development was disclosed at the closing meeting of the annual convention of the American Veterinary Medical Association.

Dr. Eugene Gill, project leader of the Animal Disease and Parasite Research Division, United States Department of Agriculture, said the new vaccine, made of killed virus, when given to 14-day-old chicks was found to protect the birds throughout the broiler growing period. Revaccination at 12 weeks of age protected birds up to 32 weeks, the longest period tested in these trials.

NEW MINISTRY LABORATORY FOR EAST ANGLIA

A veterinary investigation laboratory to serve Norfolk and East Suffolk has just been established by the Animal Health Division in Mile Cross Lane, Norwich.

The laboratory is equipped for diagnosing disease in farm livestock, including poultry, apart from notifiable diseases. There are good facilities for *post-mortem* examinations, and separate laboratories for different diagnostic procedures.

THE SOUTH EAST MIDLANDS V.M.A.

Members of the South East Midlands Veterinary Medical Association visited the Greenford headquarters of Glaxo Laboratories Limited on September 3rd.

After being entertained to lunch, the visitors toured the Biological Department, Ampoule Department, and the Tablet Department where millions of tablets are produced monthly. Perhaps the most interesting part of the tour was a visit to the Streptomycin Filling Hall. This is a completely sterile area and the visitors watched operations from behind plate-glass in the visitors' gallery.

XUM

NEW R.V.C. FIELD STATION

The section of the Royal Veterinary College which was formerly operating at Streatley has now been transferred to the new field station near Potters Bar. The full address is: Royal Veterinary College, Field Station, Hawkshead House, Hawkshead Lane, North Mimms, Hatfield, Herts.

SPECIAL NUMBERS OF "THE RECORD"

As has been the custom in recent years, there will be three special Congress issues of THE VETERINARY RECORD. Next week an enlarged issue of 60 pages will introduce the Congress; on September 27th we shall publish in full the President's address to the Association, a biography of the incoming President and accounts of the official opening of Congress and other functions. The third special issue will contain illustrated accounts of the annual banquet, the President's reception, etc., and a full note on the Annual General Meeting. Clinical and scientific papers will be published as usual.

NEW ADDRESS FOR P.I.D.A.

The Pig Industry Development Authority is moving from its present Chester Terrace offices on September 15th to P.I.D.A. House, Ridgmount Street, London, W.C.1. Telephone: LANgham 9174.

The Authority's Senior Officer in Scotland, Mr. Ronald Smith, can be contacted c/o Royal Highland and Agricultural Society of Scotland, 8, Eglinton Crescent, Edinburgh, 12. His telephone number is Caledonian 6106.

REFRESHER COURSE AT GLASGOW

Some veterinarians consider that the development of post-graduate education is probably the most important requirement at the moment in the field of veterinary education. There have been opportunities in the last 10 years for improving the facilities for undergraduate veterinary education but it is generally recognised that the 5-year course cannot do more than provide a general basic training in veterinary work and does not cater for the training of specialists. The wide diversity of opportunity for veterinary surgeons at the present time in itself tends to demand specialised training. Post-graduate training for those interested in academic and research work leading to the degrees of Ph.D., M.Sc., and post-graduate diplomas, is readily available to veterinary surgeons who wish to train themselves in a particular discipline. The needs of post-graduate training for those who wish to go into practice or take up Ministry work are equally great but fortunately they are largely met while the recent graduate is working as an assistant or in the junior branch of the service of his choice. It is generally appreciated that the recent graduate has been trained in general principles and completes his training with a practitioner or while working as a junior in the Ministry service.

What is not at all well catered for meantime are the needs of those who have been qualified for, say, 5 or 10 years and who wish to keep abreast of recent developments. This may be done by perusal of scientific journals, by attending congresses and refresher courses. In addition to this, in Glasgow Veterinary School an attempt has been made to meet the need by an intensive refresher course which is held at the beginning of every academic year. The course so far has always been fully subscribed and appears to serve a useful purpose, but by its very nature, and by the time available, is limited in scope. Last year a course spread over the winter and spring terms, and which was in effect a refresher course, was also run in Glasgow by the Medical Department of the Veterinary School. This was held on alternate Thursday evenings and appeared to be very popular. On occasion as many as 60 people attended, some of the veterinary surgeons travelling at least 100 miles.

During the coming winter and spring terms it is proposed to hold a similar course in the field of recent advances in small-animal surgery. It may well be that the choice of subject may not have such a wide appeal but it would seem that some small-animal practitioners from very considerable distances would wish to attend. The practice in the past has been for the lecture to start about 8 p.m., lasting about an hour, leaving at least one hour for general discussion of the subject. This distribution of the time is a recognition of the benefits that can arise by a general interchange of views by those who have specialised or are particularly interested in a special subject.

HUMANE SLAUGHTER IN THE UNITED STATES

A correspondent recently in America writes: —

The American Government has at last made some effort to catch up with Britain and some European countries on humane slaughter legislation. President Eisenhower has recently signed a Bill which, although far from being comparable with enactments in Britain is a great triumph for the will of the American people against enormous vested interests whose methods have hardly changed since Upton Sinclair wrote "The Jungle" over 50 years ago. The new Bill does not make inhumane methods illegal, but it forbids Government agencies from placing meat contracts with packers who do not use humane slaughter methods in their packing houses. As the Government is a very large purchaser of meat and meat products, this will go far towards introducing modern slaughtering methods. The Hormel bacon factories introduced the CO_2 method some years ago, and some of the lesser factories are already using captive-bolt pistols and electricity; but Federal legislation has been singularly lacking until the recent Bill was signed.

R.C.V.S. OBITUARY

We record with regret the deaths of the following members of the profession:—

RINGWOOD, Stephen Michael, Sunnybank, Enniscorthy, Co. Wexford. Graduated Dublin, December 12th, 1907. Died August 20th, 1958, aged 73 years.

S.V.R. Obituary

HARRISON, John Miles, of 63, North Eastern Road, Thorne, Yorks. Admitted to the Register December 15th, 1949. Died August 29th, 1958, aged 69 years.

PERSONAL

Dr. D. Poynter (late of the Animal Health Trust Equine Research Station) and Mr. A. M. R. Nelson, M.R.C.V.S., have both recently joined the veterinary research department at Allen and Hanburys Limited, Ware.

Mr. M. Sachs, of Leeds, is taking up an appointment as veterinary surgeon to the co-operative village of Kfar Vitkiv, near Nathanja, Israel.

Births

AITKEN.—On August 25th, 1958, to Margaret (*née* Arthur) and George Aitken, M.R.C.V.S., of Millfield House, Diss, Norfolk, a daughter, Elizabeth Margaret, a sister for Douglas.

JOHNSON.—On September 6th, 1958, to Dinah, wife of Roger Johnson, B.V.SC., M.R.C.V.S., Castle Cary, Somerset, a daughter, Charlotte Clare.

ORFEUR.—On September 5th, 1958, at Butleigh Hospital, Glastonbury, to Bridget, wife of Bernard Orfeur, M.R.C.V.S., a son, Peter James.

WATKINSON.—On August 8th, 1958, to Jessie, wife of Jack Watkinson, B.V.M.S., M.R.C.V.S., 8, Thornborough Crescent, Leyburn, Yorks, a daughter, Jane Mary, sister for Helen.

Marriages

BARR—MACLEAN.—At St. John's Cathedral, Oban, on September 3rd, 1958, by Provost D. A. G. Muir, William McKinlay, son of the late Rev. A. D. Barr and Mrs. Barr, Duisdale, Lochgilphead, to Flora Loudoun Kirstie, daughter of Sqn. Ldr. and Mrs. L. J. MacLean, Glenmore, Kilmelford, by Oban.

LINFORD—HAMMOND.—On August 16th, 1958, at Purleigh, Nr. Chelmsford, David Marshall Linford to Wendy Margaret Hammond, M.R.C.V.S.

TAVERNOR—BRAZIL.—On August 9th, 1958, at the church of St. Peter and St. Paul, Great Missenden, Bucks., William Derek Tavernor, B.V.SC., M.R.C.V.S., of Stockport, Cheshire, to Susan Anne Brazil of Great Missenden, Bucks.

WILSON—MITCHELL.—At St. Leonard's-in-the-Fields Church, Perth, on September 3rd, 1958, by the Rev. Wm. N. Moir, B.D., assisted by the Rev. J. Douglas Duff, B.D., Harry Cowan, B.V.M.S., M.R.C.V.S., twin son of Mr. H. M. Wilson, M.R.C.V.S., and Mrs. Wilson, Kingask House, Cupar, to Mary Meikle Sword, second daughter of Mr. and Mrs. G. S. Mitchell, Glenburnie, Brompton Terrace, Perth.

COMING EVENTS

September

17th (Wed.). Meeting of the North Wales Division at the Further Education Centre, Caernarvonshire County Council Farm Institute, Glynllifon, Caernarvon, 2 p.m.

18th (Thurs.). Meeting of the Dumfries and Galloway Division in the Lockerbie House Hotel, Lockerbie, 2.15 p.m.

Autumn Meeting of the East Midlands Division at Boots Veterinary Research Division, The Priory, Thurgarton, Notts., 12.45 p.m.

21st to 26th (Official Opening, Monday, September 22nd). 76th Annual Congress of the British Veterinary Association in Douglas, Isle of Man.

23rd (Tues.). General Meeting and Dinner of the Royal (Dick) School of Veterinary Studies Alumnus Association at the Villiers Hotel, Douglas, I.o.M., 6 p.m.

27th (Sat.) Symposium on "Nutritional Hazards caused by Radioactive Contamination of Foods" by the Scottish Group of the Nutrition Society in Edinburgh.

October

2nd (Thurs.). General Meeting of the Central Veterinary Society at the Royal Veterinary College, Camden Town, N.W.1, 6 p.m.

4th (Sat.). R.A.V.C. Old Comrades' Association Annual Reunion and Dinner, Bridge House Hotel, London Bridge.

9th (Thurs.). Meeting of the Ayrshire Veterinary Association in the Ailsa Lounge, 2.30 p.m.

10th (Fri.). General Meeting of the Midland Counties Veterinary Association at the Ministry of Agriculture Veterinary Investigation Centre, Block C, Government Buildings, Redhill, Worcester, 2.45 p.m.

17th (Fri.). Meeting of the Lincolnshire and District Division at the George Hotel, Grantham, 2.15 p.m.

22nd (Wed.). Meeting of the R.A.V.C. Division at the Home of Rest for Horses, Boreham Wood, Herts., 11 a.m.

23rd (Thurs.). Dinner-Dance of the Yorkshire Veterinary Society at the Cairn Hydro Hotel, Harrogate.

31st (Fri.). General Meeting of the Yorkshire Veterinary Society at the Hotel Metropole, Leeds.

XUM

ADDRESSES OF DISEASE INFECTED PREMISES

The list given below indicates, first the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Anthrax

Northants. Manor Farm, Warmington, Peterborough (Sept. 2); Knutson Hall Park, Irchester (Sept. 5).

Staffs. Blackberry Lane Farm, Doxey Road, Stafford (Sept. 5).

Fowl Pest

Cambs. 2a, Westmoor Farm, Chatteris (Sept. 5); 161, West End, March (Sept. 8).

Essex. Springfields, Howe Street, Gt. Waltham, Chelmsford (Sept. 2); Greenrig, Horkesley Road, West Bergholt, Colchester (Sept. 5); Ludham Hall, Braintree (Sept. 6).

Kent. Meadowcroft, Powercroft, Sidcup (Sept. 5).

Norfolk. Rectory Farm, Bunwell, Norwich (Sept. 2); Park Common Farm, Kenninghall, Norwich (Sept. 3); Colman Road Allotments, Norwich; Winsford Hall, Stokesby, Gt. Yarmouth; Moreland, Old Catton, Norwich (Sept. 4); Church Farm, Weston Longville; White House Farm, Marsham (Sept. 5); 14, Le Neve Road, Marsham; Watton Road, Hingham; Stubbs Farm, Stubbs Green, Loddon, Norwich (Sept. 7).

Surrey. Ladygrove Farm, 20, Selsdon Park Road, Selsdon (Sept. 5).

Sussex. Woodside Poultry Farm, Falmer Road, Woodingdean, Brighton (Sept. 7).

Swine Fever

Bucks. Dukes Hill Farm, Windsor Road, Fulmer, Slouth (Sept. 3).

Glouc. Yew Tree Farm, Somerford Keynes, Cirencester (Sept. 5).

Herts. Astonbury Farm, Aston, Stevenage (Sept. 2); Field House Piggeries, West End Lane, Essendon, Hatfield (Sept. 8).

Hunts Trelawn, Mereside, Ramsey, Huntingdon (Sept. 2).

Kent. New Barn Farm, Cooling, Rochester (Sept. 2).

Lancs. Little Tongues Lane, Preesall (Sept. 3).

Norfolk. Westbury, Reepham Road, Bawdeswell, Dereham; Broadflash Farm, Merton, Thetford (Sept. 2).

Northants. Ivy Lodge, Blakesley, Towcester; Greens Norton Park, Towcester (Sept. 8).

Rutland. Horseshoe Farm, Barley, Oakham (Sept. 5).

Somerset. Reedley Farm, Podimore, Yeovil (Sept. 2).

Suffolk. Oak Farm, Worlingworth, Woodbridge (Sept. 2); Brook Farm, Flowton, Ipswich; Meadows Farm, Capel St. Mary, Ipswich (Sept. 8).

Surrey. Home Farm, Warlingham Park Hospital, Warlingham (Sept. 2).

Sussex. 427, Mile Oak Road, Portslade, Brighton (Sept. 8).

Warwicks. Woodlands Farm, Hockley Heath, Solihull (Sept. 5); Piggery Napton Road Allotments, Southam, Leamington Spa (Sept. 8).

Worcs. The Poplars, Himbleton, Droitwich (Sept. 3).

Yorks Rybeck Farm, Thirsk (Sept. 8).

FIFTY YEARS AGO

Bachelors of Science may experience a glow of satisfaction on reading the following extracts from a leading article:—

Last week we published a pass list showing that, despite the reduced attendance at the schools, the B.Sc. Degree in Veterinary Science of London University is attracting a certain number of students and recent graduates. Probably this number will increase very shortly, but it is not at all likely that the degree will ever be very commonly held by veterinarians—nor, indeed, is it desirable that it should be.

There are two great difficulties. In the first place—unless exemption is obtained by the production of an educational certificate not often possessed by a veterinary student—the matriculation examination of the University, the severity of which is well known, must be passed as an essential preliminary. Again, the University's standard of examination for its degree is higher than that of our diploma. The average student is already fully taxed to obtain the M.R.C.V.S. within four years. To obtain the B.Sc., his studies in more than half the subjects of the professional curriculum—including some of the most difficult ones—must extend beyond the requirements of the R.C.V.S.

It seems clear, then, that only students distinctly above the average will be able to obtain this degree, and those are precisely the conditions which should be attached to a University degree for veterinary surgeons. Such a degree carries no license to practise; it is simply a hall-mark of scientific attainments beyond those required for the possession of the diploma. To reduce its standard to that of the R.C.V.S. would defeat the object with which it was instituted.

Though the difficulties of obtaining the B.Sc. must not be underrated, yet it is certain that—speaking from a commercial standpoint [*sic*]—it will be very valuable to its possessor.

ADVERTISER'S ANNOUNCEMENT

PARKE, DAVIS & COMPANY, LIMITED, Hounslow, Middlesex, announce that, with effect from September 15th, Aerosol Chloromycetin Tincture (Colourless) will be available for local treatment of wounds and superficial infections

Aerosol Chloromycetin Tincture (Colourless) is supplied in tins of 3 fluid ounces.

DISEASES OF ANIMALS ACT, 1950—GREAT BRITAIN

Summary of Returns of Confirmed Outbreaks of Scheduled (Notifiable) Diseases

Period		Anthrax	Atrophic Rhinitis	Foot-and-Mouth	Fowl Pest	Sheep Scab	Swine Fever
1st to 15th August, 1958		2	—	2	55	—	44
Corresponding period in	1957	6	—	1	20	—	48
	1956	11	—	36	40	—	30
	1955	12	1	—	8	—	46
1st January to 15th August, 1958		104	3	113	426	—	865
Corresponding period in	1957	248	6	38	586	—	616
	1956	1,074	8	49	428	—	510
	1955	484	3	6	379	—	1,010